HOUSING PRICE INDEX

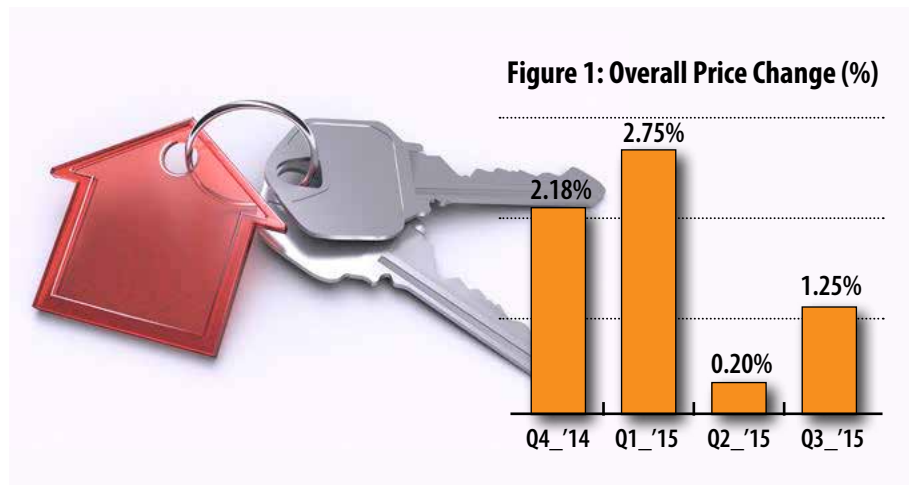## Highlights

1 The third quarter of 2015 represented the sustenance of the stability in house prices. The quarter saw prices rise by a marginal 1. 26 percent, albeit representing a relatively faster increase compared to the 0.2 percent increase during the second quarter.

2 The preference of apartment to bungalows and maisonettes is reflected in their relatively higher price movements than those of the other two house categories. With apartments targeting the middle class, their popularity is a function of their relative affordability.

3 Demand for houses on offer continued to be influenced by the location of the house (therefore the kind of social amenities available), a preference for gated communities (implying the importance of convenience and security), and the characteristics that will be appealing to the increasingly discerning households.

House prices respond to FX Volatility and rising interest rates

Figure 1: Overall Price Change (%)

The third quarter of 2015 represented the sustenance of the stability in house prices. The quarter saw prices rise by a marginal 1.26 percent, albeit representing a relatively faster increase compared to the 0.2 percent increase during the second quarter (**Figure 1**). The observed modest price movements signals the softening of the overall house prices in line with the demand and supply conditions.

For a given level of supply of housing units, demand seems to be responding according to both the prevailing and expected overall economic conditions. The economy's real output growth of 5.5 percent during the second quarter of 2015 represented a slowdown from a 6 percent real growth realised during last year's corresponding quarter. As the economy entered the third quarter of 2015, there was an inevitable tightening of monetary policy on the back of volatility in the foreign exchange market. As would be expected, there was a shift of expectations towards a high

Table 1: Price Movement Series

Period	Q-on-Q Index*	With Q1_13 as Fixed Base
Q1-2013	100.00	100.00
Q2-2013	101.42	101.42
Q3-2013	103.25	101.46
Q4-2014	100.66	101.63
Q1-2014	101.86	102.13
Q2-2014	103.45	102.29
Q3-2014	101.87	102.44
Q4-2015	102.18	102.71
Q1-2015	104.99	102.97
Q2-2015	105.01	103.88
Q3-2015	106.27	107.34

* Index with a moving base

House prices respond to FX Volatility and rising interest rates

PHOTO/ Ray White

Technical Note

The index follows a Laspeyers index method. In this method, the index is computed by getting the ratio the estimated current quarter price from the hedonic method multiplied the weights of the preceding quarter to the price of the preceding quarter multiplied by the respective weights of that quarter.

The weights of the quantitative variables are obtained by getting their respective mean values. For the dummy variables however, their weights are computed as the proportions of the number of houses possessing a certain attribute to the total number of houses. Thus the index is computed by the formular:
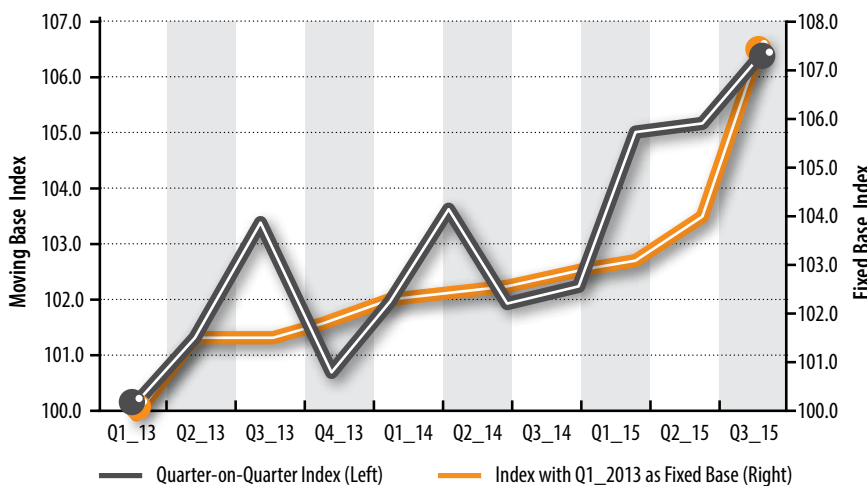
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interest rates regime that is shaping the decision making of households seeking to take mortgages towards home acquisition. The Evolution of the KBA Housing Price Index (KBA-HPI), whose computation is based on the Laspeyers Index methodology (see **Technical Note**), since the first quarter of 2013 is shown in **Table 1** and **Figure 2**.

From **Figure 2,** it is evident that the index with a fixed base has a sharp rise from 103.88 to 107.34 representing a 3.46 percentage rise. In comparison, the index with a moving base had marginal rise of 1.26 per cent. This is becaus for a fixed base, the current prices are matched to those of the base period whic are likely to be lower.

In the case of a moving base, the current prices are matched to the immediate preceding quarter hence the marginal price rise.

$$Index = \sum_{i=1}^{n} w_i \frac{\hat{P}_1}{\hat{P}_0} = \frac{\sum_{i=1}^{n} w_0 \hat{P}_1}{\sum_{i=1}^{n} w_0 \hat{P}_0}$$

Where; $\hat{P}_1$ is the shadow price from the estimated hedonic function for the current quarter;

$\hat{P}_0$ is the shadow prices from the estimated hedonic function for the preceding quarter;

and w_0 are the weights of the respective variables for the preceding quarter.

Figure 2: KBA–House Price Index

Legend: Quarter-on-Quarter Index (Left) — Index with Q1_2013 as Fixed Base (Right)

Location, convenience and security continue to drive price

The determination of the qualitative and quantitative parameters that drive the house price changes is based on the estimation of a hedonic function. The estimates of the hedonic function for Quarter 3 of 2015 are given in **Table 2** while for comparison purposes those for Quarter 2 and 1 of 2015 are given in **Tables 3 and 4** respectively.

The estimates indicates a revealed preference of houses still continue to be influenced by their size more specifically the plinth area, number of bedrooms, whether the house has a balcony, master ensuite and to a lesser extent whether a house has domestic staff quarters. This is consistent with what was observed in Quarter 2 of 2015.

Similarly, consistent with Quarter 2 of 2015, the demand for houses on offer was influenced by the location of the house (therefore the kind of social amenities available such as proximity to good roads, shopping malls and centres, schools, health centres among others), a preference for gated communities (implying the importance of convenience, scenic value from uniform house designs and security), and the characteristics that will be appealing to the increasingly discerning households.

Factors affecting the
SALES PRICE

- • **Number of bedrooms**
- • **Number of bathrooms**
- • **Type of the house – (e.g. bungalow, Maissonette, apartment, town house etc.)**
- • **Number of floors**
- • **Location of the house**
- • **Presence of DSq (Detached servants quarters)**
- • **Presence of swimming pool**
- • **Age of the house**
- • **Presence of garage**
- • **Presence of a garage**
- • **Presence of a shopping mall**
- • **Presence of parking bay(s)**
- • **Presence of a balcony(s)**
- • **Presence of a gymnasium**
- • **Master ensuite**
- • **Presence of a borehole**
- • **Presence of a fire place**
- • **Presence of a garden/ backyard**
- • **Presence of a separate dining**

Buyers opt for homes in more affordable region 2

Looking at the index with Q1_2013 as the fixed base the apartment prices appear to be a bit more volatile compared to prices of bungalows and maisonettes. This confirms the fact that the rising middle class is preferring apartment to bungalows and maisonettes as they are more affordable among the three types of houses.

However, from the regional index decomposition, we note that the prices for apartments region 3 and region 2 are moving faster compared to prices in region 1 on quarterly basis with index for region 3 and region 2 standing at 105.21 and 103.37 respectively compared to 100.74 for

region 1 in quarter 3. This is for the fact that in region two and three, the crude average price is on upper level (beyond Ksh 25 Million for region 3 and between 10 Million to 19 Million for region 2) which could be an incentive for skewed market in favour of such regions given the high profit margins likely to arise from them.

For the moving base, similar trend as for the fixed based is evidenced. Apartment prices seem to be changing faster across all the regions compared to maisonettes and bungalows. Comparing all the regions, prices for region 2 seem to be in an upward moving more compared to region 1

with that of region 3 stagnating. This could imply potential home buyers considering acquiring houses from region 2 which are more affordable compared to region 3.

Further looking at both the moving base and the fixed base sub regional indices, it's clear that there is a negative relationship in price movements between bungalows and the apartment prices across all the regions is easing and in some moments prices for both bungalows and apartment are moving in similar directions.

This is an implication of the number of old bungalows offered in the market declining meaning that prospects for redevelopment of old bungalows into new apartments are becoming dismal.

Table 2: Housing Price Index Drivers for Quarter 3_2015

Source	SS	df	MS
Model	699.337986	24	29.1390827
Residual	123.251973	462	0.11245618

Prob > F = 0.0000
Number of obs =   1121
R-squared = 0.8502
Adj R-squared = 0.8469

LN VALUE	Coef	Std. Err.	t - stats	P>|t|	[95% Conf. Interval]	
Lnarea	0.3652	0.0194	18.8	0.000	0.3270748	0.4032351
Bedrooms	0.0406	0.0268	1.52	0.130	0.0930716	0.0119384
Bathrooms	0.2969	0.0263	11.3	0.000	0.2453086	0.3484492
House type	0.1348	0.0316	4.27	0.000	0.0727924	0.1967305
Age	-0.0240	0.0286	-0.8	0.403	-0.0801471	0.0322018
Time Dummy Q3'15	0.0264	0.0433	6.1	0.000	0.1793089	0.3492391
Location	0.0184	0.0037	4.95	9.620	0.0110991	0.0256982
Number of floors	-0.0064	0.0115	-0.6	0.579	-0.0290336	0.016233
backyard	-0.3095	0.0981	-3.2	0.002	-0.5020209	-0.1169508
balcony	0.0112	0.0480	0.23	0.815	-0.0829761	0.1054457
DSQ	0.4867	0.0506	9.62	0.000	0.3874606	0.5859289
Gymn	0.1805	0.0735	2.46	0.014	0.0363957	0.3246451
Swimming pool	0.0881	0.0682	1.29	0.196	0.0456287	0.2219076
Social amenities	0.1373	0.0358	3.84	0.000	0.0671017	0.2075958
Master ensuite	0.5005	0.0436	11.5	0.000	0.415065	0.5860305
Garage/parking	0.1632	0.0365	4.47	0.000	0.0916259	0.2347301
Separate dining	0.0687	0.2859	0.24	0.810	0.4922462	0.6296988
Gated community	0.1407	0.0580	2.42	0.016	0.0267771	0.254547
borehole	0.0820	0.0443	1.85	0.065	-0.0049775	0.1689056
gurstroom	-0.1992	0.1638	-1.2	0.224	-0.5206411	0.1221543
jaccuzi	0.2203	0.0812	2.71	0.007	0.0610959	0.3795898
elevator	-0.6461	0.1212	-5.3	0.000	-0.8838704	0.4082521
backup - generator	0.0554	0.0958	0.58	0.563	-0.1326077	0.2433916
wooden Floor	0.8107	0.0806	10.1	0.000	0.6525531	0.9688494
constant	12.5343	0.1436	87.3	0.000	12.25249	12.81606

Housing Price Index
Quarter 3, 2015   **+106.27**

Table 3: Housing Price Index Drivers for Quarter 2_2015

Source	SS	df	MS
Model	778.397411	19	40.9682848
Residual	163.459877	1529	0.106906395

Number of obs = 1549
F(19, 1529) = 383.22
Prob > F = 0.0000
R-squared = 0.8264
Adj R-squared = 0.8243
Root MSE = 0.32697

LN VALUE	Coef	Std. Err.	t - stats	P>|t|	[95% Conf. Interval]	
LN AREA	0.2714414	0.0143168	18.96	0.000	0.2433587	0.2995241
Bedrooms	0.1374258	0.0230495	5.96	0.000	0.0922137	0.1826378
Bathrooms	0.0564309	0.025917	2.18	0.030	0.005594	0.1072676
Age	-0.1169339	0.0135849	-8.61	0.000	-0.1435809	-0.0902869
Time Dummy Q2'15	0.3719	0.0654	5.69	0.000	0.243248	0.5006348
Floors	-0.0906218	0.0093981	-9.64	0.000	-0.1090563	-0.0721872
Location	0.0822811	0.0034404	23.92	0.000	0.0755327	0.0890294
Backyard	-1.800684	0.1141361	-15.78	0.000	-2.024564	-1.576804
Balcony	0.398455	0.0386545	10.31	0.000	0.3226336	0.4742763
Dsq	-0.0822993	0.0312342	-2.63	0.409	-0.1435657	-0.0210329
Gymn	0.4789688	0.070293	6.81	0.000	0.341088	0.6168496
Spool	0.362732	0.0549305	6.60	0.000	0.254985	0.4704791
Socialammenities	0.1356015	0.0238121	5.69	0.000	0.0888937	0.1823092
Garageparking	0.6958917	0.0304572	22.85	0.000	0.6361493	0.7556341
Masterensuite	0.2534526	0.0289325	8.76	0.000	0.196701	0.3102043
Separatedining	0.0405952	0.0588494	0.69	0.490	0.074839	0.1560293
Gatedcommunity	0.9606869	0.067051	14.33	0.000	0.8291653	1.092209
Borehole	0.2260852	0.0393166	5.75	0.000	0.1489652	0.3032053
Guestrm	0.0622523	0.1664845	0.37	0.709	-0.2643099	0.3888145
Jaccuzi	0.0464504	0.068501	0.68	0.498	-0.0879155	0.1808162
Constant	12.96218	0.1020273	127.05	0.000	12.76205	13.16231

Housing Price Index
Quarter 2, 2015 **+105.01**

Table 4: Housing Price Index Drivers for Quarter 1 _2015

Source	SS	df	MS
Model	474.31577	22	21.559808
Residual	40.720436	794	0 .05128

Prob > F   = 0.0000
Number of obs =   817
R-squared   = 0.9209
Adj R-squared = 0.9187

LN VALUE	Coef	Std. Err.	t - stats	P>|t|	[95% Conf. Interval]	
LN Area	0.0436	0.0507	0.86	0.3910	-0.0560	0.1431
Bedrooms	0.1247	0.0228	5.48	0.0000	0.0800	0.1694
Bathrooms	-0.2129	0.0450	-4.73	0.0000	-0.3012	-0.1245
Type	-0.0079	0.0440	-0.18	0.8580	-0.0943	0.0786
Age	-0.2982	0.1821	-1.64	0.1020	-0.6556	0.0592
Time Dummy Q1'15	0.1861	0.1139	1.63	0.0000	0.7626	1.2097
Location	0.0136	0.0094	1.45	0.1470	-0.0048	0.0320
Floors	0.0935	0.0166	5.62	0.0000	0.0609	0.1261
Back-yard	-0.5335	0.1781	-3.00	0.0030	-0.8831	-0.1838
Balcony	-0.8108	0.1153	-7.03	0.0000	-1.0371	-0.5844
Detached S quarters	0.7534	0.0726	10.38	0.0000	0.6109	0.8959
Gymn	-0.4471	0.1603	-2.79	0.0050	-0.7619	-0.1328
Swimming pool	0.7755	0.0976	7.94	0.0000	0.5838	0.9671
Social ammenities	0.7637	0.0747	10.22	0.0000	0.9104	0.6170
Garage parking	0.2289	0.1415	1.62	0.1060	-0.0488	0.5067
Master en-suite	0.0569	0.0618	0.92	0.3580	0.0645	0.1783
Separate dining	0.5519	0.1108	4.98	0.0000	0.3344	0.7694
Gated Community	-0.2268	0.1321	-1.72	0.0860	-0.4860	0.0324
Guest room	0.0333	0.1675	0.20	0.8430	-0.2955	0.3620
Jaccuzi	1.5442	0.2466	6.26	0.0000	1.0601	2.0283
Elevator	0.0358	0.0960	0.37	0.7090	-0.1525	0.2242
Back-up generator	0.1223	0.1598	0.77	0.4440	-0.1914	0.4360
Wooden floor	0.7613	0.2672	2.85	0.0050	0.2367	1.2858
Constant	15.8070	0.3440	45.95	0.0000	15.1317	16.4822

Housing Price Index
Quarter 1, 2015   **+104.99**

Table 5: Inter quarter Sub-regional index (Fixed base): 2013 - 2015

	Region 1			Region 2			Region 3		
	Apartments	Bungalows	Maisonettes	Apartments	Bungalows	Maisonettes	Apartments	Bungalows	Maisonettes
Q1-2013	100	100	100	100	100	100	100	100	100
Q2-2013	100.06	100.04	100.60	100.05	100.61	100.11	100.01	100.93	100.03
Q3-2013	99.02	99.67	99.67	100.09	102.44	102.44	99.65	104.13	98.10
Q4-2013	99.86	100.74	100.74	98.88	101.53	101.80	100.32	103.45	103.45
Q1-2014	99.57	100.55	100.55	99.41	101.46	101.01	100.24	102.20	100.11
Q2-2014	99.62	100.34	97.76	100.98	102.07	101.39	100.82	102.18	101.47
Q3-2014	99.94	100.04	97.88	100.51	101.06	104.15	99.19	102.29	99.74
Q4-2014	99.74	100.52	98.93	100.48	100.19	102.15	100.07	104.09	99.41
Q1-2015	95.39	101.32	100.19	100.13	100.741	101.67	100.05	104.52	99.50
Q2-2015	99.41	102.95	101.41	101.90	100.81	100.01	103.23	104.70	100.95
Q3-2015	100.74	102.77	101.30	103.37	101.65	103.03	105.21	106.76	104.87

Table 6: Inter quarter Sub-regional index (Moving base): 2013 - 2015

	Region 1			Region 2			Region 3		
	Apartments	Bungalows	Maisonettes	Apartments	Bungalows	Maisonettes	Apartments	Bungalows	Maisonettes
Q1-2013	100	100	100	100	100	100	100	100	100
Q2-2013	100.063	100.04	100.60	100.05	100.61	100.10	100.01	100.93	100.03
Q3-2013	99.67	100.40	99.40	102.44	100.99	100.49	98.56	105.20	102.09
Q4-2013	100.74	102.82	99.38	101.80	100.82	98.81	103.75	103.95	100.32
Q1-2014	100.45	99.38	99.67	101.63	100.91	100.91	97.70	102.58	102.58
Q2-2014	100.50	99.67	99.54	100.75	101.75	101.27	96.70	102.74	103.32
Q3-2014	99.41	100.31	100.33	100.63	101.27	99.91	98.90	102.98	100.56
Q4-2014	97.48	99.29	105.21	97.82	101.98	99.61	104.54	104.36	100.62
Q1-2015	95.20	101.54	100.95	98.67	102.01	100.25	104.67	104.92	100.71
Q2-2015	102.92	102.78	100.53	101.11	102.05	100.77	105.23	104.91	102.51
Q3-2015	103.54	103.04	101.02	104.81	102.99	101.51	105.54	105.43	104.08

* Definition of the Sub-regions listed overleaf

THE DEFINITION OF THE SUB-REGIONS

REGION 1
Athi River, Mlolongo, Mavoko, Nakuru, Ngong, Ruaka, Syokimau, Embakasi, Kahawa Wendani. Thika, Mtwapa, Utange, South C, Kitengela, Kiembeni, Nyeri, Likoni, Eldoret, Ruiru, Kilifi. Thika road (Kasarani, Roysambu, Ruaraka).

REGION 2
Thindigua (Kiambu Road), Kiambu, South B, Kabete, Komarock, Imara Daima, Membley, Buruburu, Rongai, Waiyaki Way (Uthiru, Kinoo, Kikuyu, Regen), Mbagathi road, Ngong Road, Langata.

REGION 3
Kileleshwa, kilimani, Lavington, Westlands, Spring Valley, Riverside, Milimani (Kisumu), Milimani (Nakuru), Runda, Karen, Garden Estate, Parklands, Ridge Ways, Muthaiga, Loresho, Kitsuru, Adam Arcade, Nyali, Mountainview

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